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ON RAMULARIA OBOVATA, FCKL.,

Sym. Mycol. p. 103.

BY J. B. ELLIS & BENJAMIN M. EVERHART.

The specimens of this species distributed in the NORTH AMERICAN FUNGI afford the following characters:

Spots orbicular, 2—8 mm., reddish brown with a dirty white center and a darker colored, narrow, sometimes slightly raised border, around which the leaf is at first purplish. Hyphæ amphigenous but mostly hypophyllous fasciculate, hyaline, continuous, very rarely with 1—2 septa, nearly straight, but often undulate, subdenticulate above, $70-125 \times 3-4 \mu$. Conidia terminal, obovate, granular, without septa, $18-25 \times 8-11 \mu$.

Specimens of *R. obovata*, Fckl. in Rabh. Winters' Fungi Europæi, agree well with the above description, but specimens collected on *Rumex crispus*, in Ohio, by Dr. W. A. Kellerman, June, 1883, and which at the time were referred to this species, differ in several particulars. The spots are larger and of a dirty gray color, without any white center. The hyphæ are shorter ($40-60 \mu$) and not undulate, and the conidia vary from oblong-clavate to cylindrical, and are, as a rule, uniseptate, occasionally 2—3 septate. Cylindrical is the prevailing form, slightly constricted at the septum, agreeing, in fact, very well with those of specimens on *Rumex* collected at Wood's Holl, Mass., by Dr. W. G. Farlow, and mentioned by him in Bulletin of the Bussey Inst., 1877, pp. 236 and 237, and in Proc. Am. Acad. 1878, p. 262, as probably referable to *Ramularia obovata*, Fckl., or *R. macrospora*, Fres., of which the first mentioned species is there regarded as a probable synonym. In preparing the list of *Ramularias*, we have found among our European specimens only one fruitful specimen of *R. obovata*, Fckl., viz., the one in Fung. Eur. already referred to. The specimen in Mycotheca Marchica, no. 493, afforded us neither hyphæ nor conidia, and on two specimens from Von Thuemen we could find no conidia. We find, however, in Hedwigia, June, 1883, a paper by Professor C. A. J. A. Oudemans on the "Identity of *Oidium monosporium*, West., *Peronospora obliqua*, Cke., and *Ramularia obovata*, Fckl." in which the Professor states that he has examined specimens of *R. obovata*, Fckl., distributed under different names in various European collections, viz., Fckl.'s Fungi, Rhenani, Cooke's British Fungi and Saccardo's Mycotheca Veneta, and finds them all agreeing with the description given by Fuckel of his *Ramularia obovata*, the obovate $20-25 \times 10-12 \mu$ conidia being constantly without septa and borne on generally simple and continuous undulate hyphæ. Prof. Oudemans also states that he examined fresh, living specimens and found them all to agree with the dried specimens and with the description of the species in question given by Fuckel. The constant invariability of the European specimens would

lead to the suspicion that there may be some error in the conclusions arrived at by Dr. Farlow in referring to *R. obovata*, Fckl., the Massachusetts specimens on *Rumex*, investigated by him and having the "mature spores long and narrow with 1—3 septa." We must either suppose that *R. obovata*, Fckl., is more variable in this country than in Europe, or that two species have been confounded. The latter appears to us the more reasonable conclusion, which is further strengthened by the fact that in examining the material furnished by Dr. Farlow (for N. A. F. no. 220), of which a part is still in our hands, one leaf was found agreeing in all respects with the Ohio specimens, while all the others afforded only the obovata spores without septa. As a further confirmation of the correctness of this conclusion is the fact that on the specimen in Rabb-Winter's. F. Eur., no. 2885, one of the obovata spores was seen in a state of germination, but still without any trace of a septum.

Considering it, then, highly probable, and in fact almost certain, that the Ohio *Ramularia* is not the *R. obovata* described by Fuckel and distributed in the various European Exsiccati referred to, we have still to consider whether, as Dr. Farlow has suggested in the papers already mentioned, this is really a form of *R. macrospora*, Fres. The fact that the fungus described by Fresenius under the name of *Ramularia macrospora* was found on a species of *Campanula* would lead us to suspect that our fungus on *Rumex* might be different. In *R. macrospora*, Fres., the hyphæ are, according to that author, 1—2 septate below and the conidia generally not septate, while in the Ohio specimens the hyphæ are, so far as we can see, without septa, and the conidia, as a rule, 1-septate. Whether the conidia are concatenate we are uncertain, but the fact that they show the scar marking the point of attachment only at one end, would indicate that they are not, though two or three conidia were seen with a knob at one end which might indicate either the formation of a second spore or the commencement of germination. Fresenius does not say whether his *R. macrospora* is on spots but Saccardo, in his *Fungi Italici* 1003 thus figures it, though the hyphæ in his figure are without septa. Unfortunately we have no authentic specimen of *Ramularia macrospora*, Fres., to enable us to decide the matter definitely, and meanwhile we here characterize the Ohio specimens under a separate name, as follows:

RAMULARIA DECIPIENS, E. & E.

Spots orbicular, gray, $\frac{1}{4}$ — $\frac{1}{2}$ cm., with a darker colored, narrow, raised border. Tufts amphigenous, scattered, whitish. Hyphæ fasciculate, issuing in dense clusters through the stomata of the leaf, hyaline, continuous, nearly straight, entire or subdenticulate above, 30—50 x 3 μ . Conidia clavate-oblong or simply oblong or more commonly cylindrical, 1-septate and mostly slightly constricted at the septum, exceptionally 2 or 3-septate, 15—35 x 6—8 μ , ends obtusely rounded.

On leaves of *Rumex crispus*, Fairfield Co., Ohio, June 1883 (Kellerman).